STATINTL [redacted]

SAF-E051-80
8 February 1980

MEMORANDUM FOR: Director of Data Processing
Deputy Director for Processing/ODP
Chief, Management Staff/ODP

STATINTL FROM : [redacted]
Project Director, CSPO/ODP

SUBJECT : WBCS Extended Requirements Study

STATINTL REFERENCE : SAF-D366-79, Letter to [redacted] from SAFE Contracting Officer, dated 26 Nov. 1979

STATINTL 1. The referent, Attachment 1, directed [redacted] to submit a proposal that describes how extended requirements prepared by Processing/ODP could be factored into the SAFE Wideband Bus Communications System design.

STATINTL 2. Attachment 2 is [redacted] proposal. It indicates that approximately $100,000 will be required during FY 1980 to implement the proposal. Because these requirements are over and beyond the SAFE requirements, supplemental funding is required.

3. Please advise me if these funds can be made available in the immediate future so that this study can be initiated without impacting the WBCS development schedule.

[redacted] STATINTL

Attachment: As stated

ILLEGIB [redacted]

SAF-E366-79

STATINTL [redacted]

Subject: WBCS Architecture

STATINTL [redacted]

The WBCS is viewed within the CIA as a facility which will eventually service a major portion of the data communications requirements in the Headquarters Building. There is concern at this time in the Agency as to whether the SAFE Program has adequately factored the projected uses of the WBCS into the Architectural Design. This letter is to outline the steps to be taken to alleviate this concern.

The Agency is currently developing a set of "Extended Requirements" for the WBCS which addresses uses beyond SAFE. A preliminary copy of this document is enclosed -- the Agency expects to have a fully validated set of requirements by 1 January 1980.

These Extended Requirements must be factored into the WBCS design process. The final WBCS design must have the necessary properties to allow a graceful evolution to a system which is compliant with the Extended Requirements; it is not acceptable to leave open the possibility of major re-engineering to satisfy the Extended Requirements.

STATINTL Accordingly, [redacted] is directed to submit a proposal to the Contracting Officer describing a plan for factoring the Extended Requirements into the design process. The plan is to be designed to maintain the current major milestones for the WBCS development; design issues and analysis activities to resolve those issues are to be identified, and; costs for tradeoff analysis that exceed the normal design process should be identified and justified.

Sincerely,

STATINTL [redacted]

Contracting Officer

Enclosure: WBCS Extended Requirements

WBCS EXTENDED REQUIREMENTS

1. This document will present the BUS extended requirements in three sections. Section I will describe a functional requirement that must be included in the BUS system. Section II will describe four major types of terminals that are expected to be supported on the BUS system. Section III will present our best estimate of the number of each type of terminal described in Section II that will be on the BUS between 1980 and 1990.

Section I - Functional Requirements

1. Terminal to Host Connection

From any terminal it must be possible for the user to easily connect to any host computer on the BUS, to which the user and terminal are authorized to access. Terminals include RJE stations.

It must also be possible to establish a default connection for a particular terminal to a particular host.

2. Printer to Host Connection

It must be possible to assign a printer to a particular host. The option must be available for an authorized user at a printer to temporarily connect it to a different host computer.

3. Host to Host Connection

It must be possible for a host computer on the BUS to connect to another host on the BUS for file transfer. An example would be the bisync connection used today between mini computers and IBM host computers. It must also be possible for a host computer to connect to a different host as if it were an interactive CRT terminal. The data rate on the host to host connection for file transfer would be from 19.2KB to 56KB. Higher speeds would be desirable but not mandatory.

4. Outbuilding Support

The BUS system design should provide for the installation of a BUS in major Agency outbuildings (from 4 to 8) to service all terminals in the building.

The users of the BUS in such a building should have the same capability as in Headquarters, except that there may be a limitation of data rate between the two buildings.

5. Usage Statistics

The BUS system must provide accounting on the utilization of each terminal on the BUS to each host similar to the existing Comten Accounting Information system. The BUS system must also enforce security rules that would prevent certain connections between terminals and host computers or host to host connections.

6. Host Computers

The BUS would be connected to twelve IBM host computers in 1984 and sixteen IBM computers by 1990. The number of active terminals on the IBM host would vary from 100 for a 158, to 500 for a large VM host. The maximum active terminals on a given IBM channel would be 250 terminals.

The BUS would also service some number of mini computer hosts. These would support from 4 to 64 terminals active at any given time. The number of mini computer hosts is hard to estimate but would be in the range of 25 to 50 by mid 1986.

Section II - Major Terminal Types

1. Standard CRT Terminal

a. Data Rate: 19.2KB normal speed, option for 9600, 4800 and 2400 baud speeds.

b. Block Size: Variable up to 256 bytes.

c. Protocol: Block type of protocol that provides flow control and retransmission. SDLC for level 1 and 2 is one possibility.

d. Utilization Profile : Average terminal will be active 20 hours per week with a BUS usage of between 3 and 10 percent when the terminal is active. The

peak hour for all terminals is expected to have 50 percent of all terminals active to one of the hosts. Burst usage could be from 2,000 to 20,000 characters in either direction. For terminals with floppy disks, burst usage could be in the 100,000 character size. Transaction usage would consist of short blocks, with input data being about 10 percent of output data (20 characters input, 200 character response).

e. Source: These terminals include the new Delta Data 260T and its future replacement (after 1985). Would be bought in large quantities according to Agency specifications. Terminal hardware and software can be adapted to interface to a BUS system.

2. Printers

a. Data Rate: Maximum speed would be 19KB, optional speeds 9600, 4800, 2400, 1200, 600, and 300 baud.

b. Block Size: 2K to 4K.

c. Protocol: IBM 3780 protocol and its replacement. Lower speed would be async, with support of Xon, Xoff for flow control.

d. Utilization Profile : Would expect constant usage during peak periods. Number of hours per week would vary from 2 to 40, during prime shift.

e. Source: Existing inventory of Metra 3780 printers. Existing Design 100 low speed printers. IBM 6670 or similar type of device. Sanders Technology Media 12/7 or similar type of device. Decwriter, TI Silent 700 or similar type of device. In all cases, standard commercial printers would be bought so that the interface should be an industry standard, and should require minimum or no modifications to the printer and its software.

3. Word Processing Devices

a. Data Rate: Normal speed would be 19KB with optional speeds of 9600, 4800, 2400, and 1200 baud.

b. Block size: 256 to 4K with most less than 1K.

c. Protocol: IBM 3780 and Async TTY or other industry standard protocols.

d. Utilization Profile : Would expect low average utilization of the BUS. Would typically want to connect to a system to route a data file to some source or receive a data file from a host CPU. Would also want ability to establish a continuous connection to a host computer so the computer could send data file to the word processor when it was available. Would also want to be able to use a printer on the BUS as an output device for the word processor system.

e. Source: In general, these systems will be commercial systems that are bought for a particular Agency group. While there will be efforts to standardize, it is reasonable to assume that there will still be a variety of word processing systems installed in the Agency. Standalone systems and clustered systems are both expected in large numbers.

4. Special Purpose Terminals

a. Data Rate: 56KB to 2400 baud.

b. Block Size: 256 to 4K.

c. Protocol: Any of the common industry standard.

d. Utilization Profile : Similar to the standard CRT terminals.

e. Source: Today the Tektronix and Ramtek are two examples of special purpose terminals connected to ODP systems. Graphic terminals will continue to be special purpose terminals that will be selected based on a specific customer requirement. These terminals must be installed in both Headquarters or out buildings.

Section III

On attached sheets.

Next 4 Page(s) In Document Exempt

cc: D/ODP
C/ED/ODP

Amoy - file

4 FEB 1980

STATINTL [redacted]

Contracting Officer

Subject: WBCS Architecture

Reference: SAF-E366-79, "WBCS Architecture," CSPO letter dated 26 November 1979

STATINTL

Dear [redacted]

STATINTL

In response to the reference letter, [redacted] is pleased to submit the enclosed proposal to perform a study to determine whether it is possible to incorporate the Extended Requirements into the current SAFE program without impacting the major milestones.

The total estimated cost plus base and award fee to perform this study is $95,611. Subsequent to your approval, the contract will have to be amended to authorize the proposed expenditure. Further, the fiscal 1980 funding will have to be increased correspondingly.

Existing contract terms and conditions remain unchanged.

Sincerely,

STATINTL [redacted]

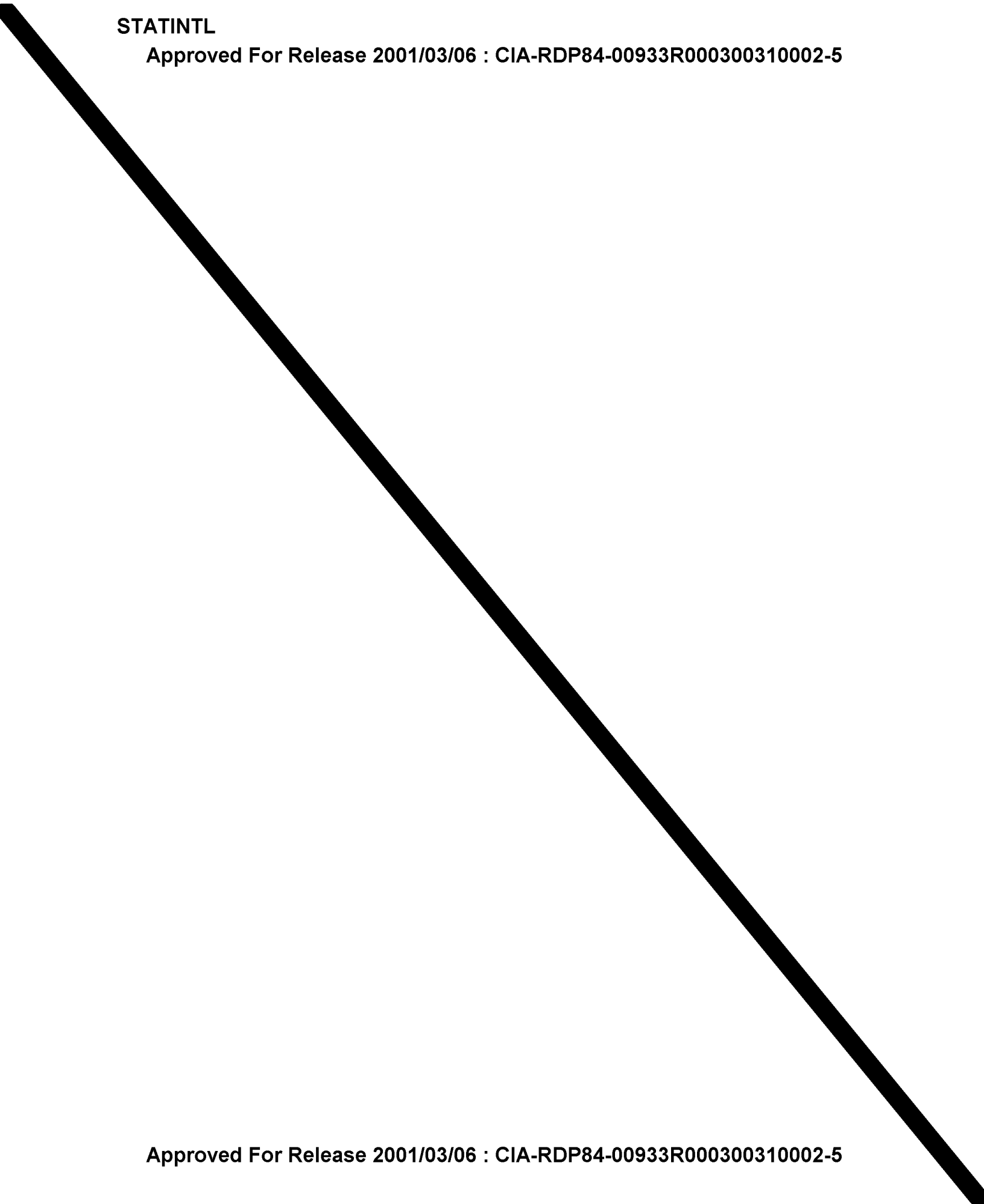
Contract Manager
SAFE Project

ER:hp

Encl.

STATINTL

cc: [redacted]



ILLEGIB

[redacted]

PROPOSED SPECIAL STUDY OF THE EXTENDED
SAFE COMMUNICATIONS REQUIREMENTS

The extended communications requirements detailed in the Reference represent a broad increase in the capabilities of the existing SAFE baseline. These requirements call for the support of a much larger number of terminals, terminal-to-terminal communication, host-to-host communication, and operation at data rates and traffic densities which are greater than those presently required for SAFE operation. Probably, some of these extended requirements can be met within the existing SAFE communications design concept established during the Design Competition Phase (DCP). However, a detailed study will be required to determine the extent of those requirements that may not be met and to determine what changes are required to the SAFE Communications Subsystem architecture and hardware development plan to incorporate these new requirements.

This study is proposed to determine whether it is possible to incorporate these requirements into the current SAFE program in a timely and cost effective manner without impacting the major milestones of the program. The schedule for performing this study is presented in Figure 1 and is structured so that the results of this study will be

available by System Design Review (SDR) although the final report will not be published until the end of July.

This study will incorporate six major areas which are presented in the study schedule. These are:

1. A Requirements Review will be conducted in which the requirements specified in the Reference will be evaluated so that a common understanding may be reached between CSPO and [redacted] on their intent and scope.

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2. A Protocol Study will be required to determine the optimum method for accommodating the increased traffic on the available channels within the Wideband Communication System.
3. Hardware Evaluation will be necessary to determine the impact on not only the Processor Interface Unit (PIUs) and Bus Interface Unit (BIUs), but also the government furnished cryptographic devices.
4. System Impact Assessment will be required to determine what if any changes are required at the System level to accommodate greater message density or a larger number of users supported by each host device. Additional impact is expected to be found in the System Control and Monitor (SCM) which will be responsible for a larger number of users than

within the present SAFE system.

5. A Cut-Over Plan will be required in order to allow smooth transition from the SAFE only requirements to the extended communications requirements with minimum impact on program milestones and cost.

6. An Implementation Proposal giving total system impact and cost to implement shall be generated in the final phase of the study and presented one month after the System Design Review (SDR).

The study plan requires approximately one man year of engineering plus supervision and support to complete. Other direct costs are included in this proposal which provide for frequent travel and technical interchange meetings between CSPO and [redacted] the reproduction and distribution of reports associated with each phase of the study, and the cost of computer simulation of the various protocols investigated during the study.

STATINTL

The actual manpower required to perform this special study will be re-evaluated based on the results of the Extended Communications Requirements Review which is the first phase of this study. Any modification would be implemented with CSPO concurrence.

In order to assure meaningful results prior to SDR, it is necessary that response to this special study request and

sufficient technical interface to support it be provided as soon as possible by CSPO.

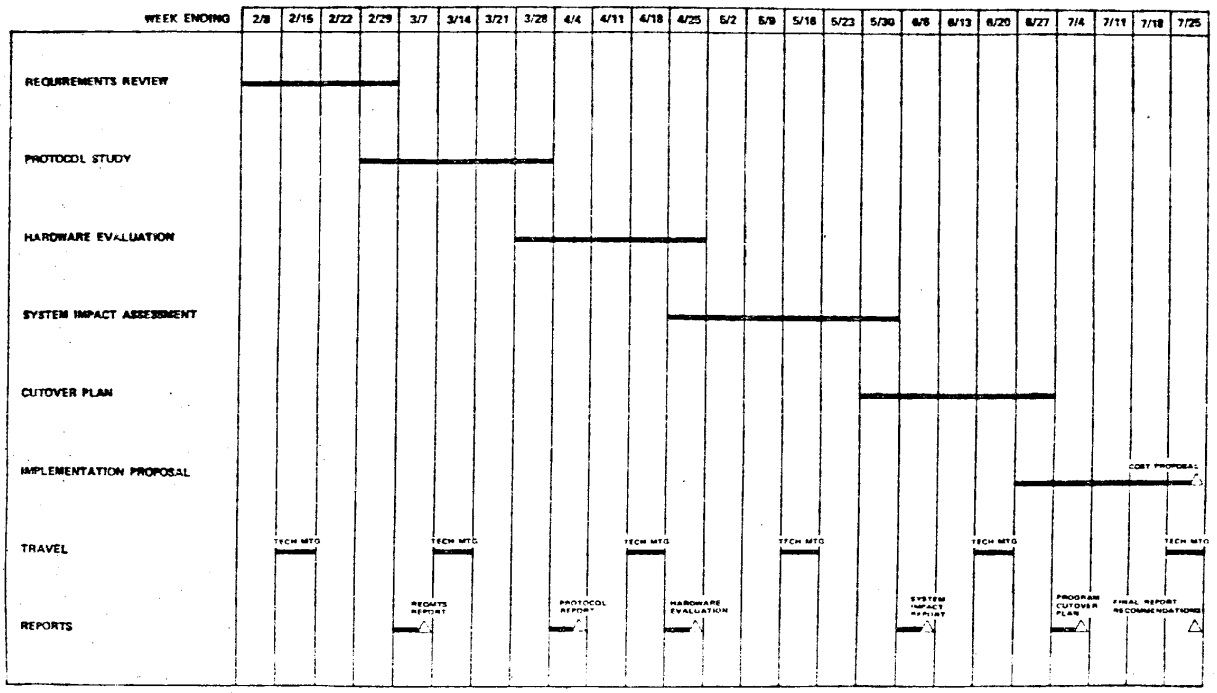


Figure 1. Extended Communications Requirements Study Schedule

Approved For Release 2001/03/06 : CIA-RDP84-00933R000300310002-5